

## ABSTRACT

Impact detecting resistors (141), (143) of an impact detecting circuit (104) detect a counter electromotive force of a step motor (105) generated due to an impact.

5 This counter electromotive force is amplified applying a predetermined period and a predetermined chopper-width by a chopper-amplifying waveform shaping circuit (118).

Therefore, even a light impact can be detected. Inverters (145), (146) compare these impact detecting signals (S22),

10 (S23) with a threshold value and detect an impact when the signals exceeds the threshold value. A controlling circuit (102) provides a lock pulse to the step motor (105) through signal lines (AA), (BB) when an impact is detected, brakes rotation of a rotor (162) thereby preventing a deviation of

15 the time displayed with a second hand (106).